On the theory of impact damping. (Cont.) 24-5-2/25

to test the calculations. It was shown that dynamical and dissipative properties of a system provided with an impact damper lead to a substantial decrease of the maximal amplitudes of vibrations in all vibrational regimes. R. E. Brunshtein and V. D. Kozhin cooperated in this work. There are 11 figures and 12 references, 9 of which are Slavic.

SUBMITTED: April 2, 1956.

AVAILABLE:

Card 7/7

KOBRINSKIY, A. Ye

AUTHORS: Kobrinskiy, A. Ye., Breydo, M. G., Gurfinkel', V.S., 20-1-20/42
Sysin, A. Ya., Tseytlin, M. L., Yakobson, Ya. S.,

TITLE: A Bioelectric Control System (Bioelektricheskaya sistema upravleniya)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 1, pp. 78-80 (USSR)

ABSTRACT: At first something on the general situation of this problem is said. The authors of the present papers wanted to work out a bioelectric system, which according to a certain programme controls a mechanical servo drive. This programme was worked out in the form of oscillations of the bioelectric potential of the muscles. The possibility of realizing such a system is based on the results of different investigations in which the dependence of the oscillations of the bioelectric potential of a muscle on its functional condition was investigated. The results of these investigations briefly indicate the following: 1) The oscillations of the biopotential of a muscle are a constant and inalienable phenomenon of the stimulating process. 2) The penetration of the biocurrent always occurs before a shortening of the muscle. 3) There is an unequivocal relation between the amount of the biopotential and the tension developped by the muscle, this relation being approximately linear to the tension up to a certain

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A. Bioelectric Control System.

level. An added diagram illustrates an oscillogram of the biocurrents which were deduced from different stretched finger-joint by applied electrodes. These deduced biocurrents develop by the total effect of the muscle fibres of a certain muscle and the numerous oscillations of the fibres of the adjacent muscles provide an additional noise-background. The first problem in the experiments with these complicated signals was the elimination of the informations on the orders from the central nervous system, which regulate the level of the tension of the muscle. As carrier of the useful information in the here discussed system only one parameter of the bioelectric system is used, that is efficiency. The authors hope for application of further parameters. The block scheme of the control system is illustrated by a graph and its function method briefly described. The system is constructed so that the biocurrents are deduced by two antagonal muscles at the same time. In the case of technical application it is well possible to connect a circuit with feed-black coupling into the wiring diagram of the control system, which circuit is based on the application of special, automatical transmitters. There are 2 figures, and 2 references,

Card 2/3

1 of which is Slavic.

KOBRINSKIY, A.Ye., doktor tekhn.nauk

Program control of machine tools. Vest.mash. 37 no.10:53-57 O '57.
(MIRA 10:11)

(Machine tools--Numerical control)

KOBRINSKIY, A. [Ye.]

KOBRINSKIY, A.A., doktor tekhn.nauk

Deviation of instruments operating in vibration conditions. (MIRA 10:11)
Priborostroenie no.10:7-11 O '57.
(Measuring instruments--Vibration)

KRUTOVA, I.N.; SUBBOTINA, O.V.; UTKIN, I.V.; KOGAN SKIY, A.Ye.; GAVRILOV, M.A.; PANTYUSHIN, S.V.

Conference of the Academy of Sciences of the U.S.S.R. on Automation. Avtom. i telem. 18 no.2:182-192 F '57. (MLRA 10:3)
(Automatic control)

AUTHOR: Kobrinskiy, A. Ye., Doctor of Technical Sciences. 30-9-11/48

TITLE: Intermittent System of Scheduled Operation of Machine Tools

(Shagovaya sistema programmnogo upravleniya stankami).

PERIODICAL: Vestnik AN SSSR, 1957, Vol. 27, Nr 9, pp. 71-76 (USSR).

ABSTRACT: During recent years the works for the creation of a system of operation (above all in metal-shearing machines) which are controllable and dirigable by figures become larger and larger in extent. According to their functional destination these workbenches or machines can be adjusted to the planned system. The principle of functioning of this system consists in the fact that the corresponding motions (the operation) of the instrument and the treatment of the object connected with it are caused by special signals. These signals are according to schedules (by figures) subjected to an alternation. This may be an according to a schedule constant automatic motion (treatment of the object) or a stage-by-stage change of motion caused by signals. This system was for the first time suggested in 1950; it can chiefly be used in workbenches and machines of metallurgical factories (see figures 1 and 2). A description of the application of this system to countersink machines (frezernyy stanok) is given. The driving mechanism plays an important part in this system. Thus the author mentions two foreign firms. one for toothed-gear cutting machines (Arma corporation) and one for countersink machines ("Industrial controls"). The ENIMS-organization did good work concerning the problem of the drive. There are 2 figures and 2 references.

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Intermittent System of Scheduled Operation of Machine Tools 30-9-11/48

AVAILABLE: Library of Congress.

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KOBRINSKIY, A.YE.

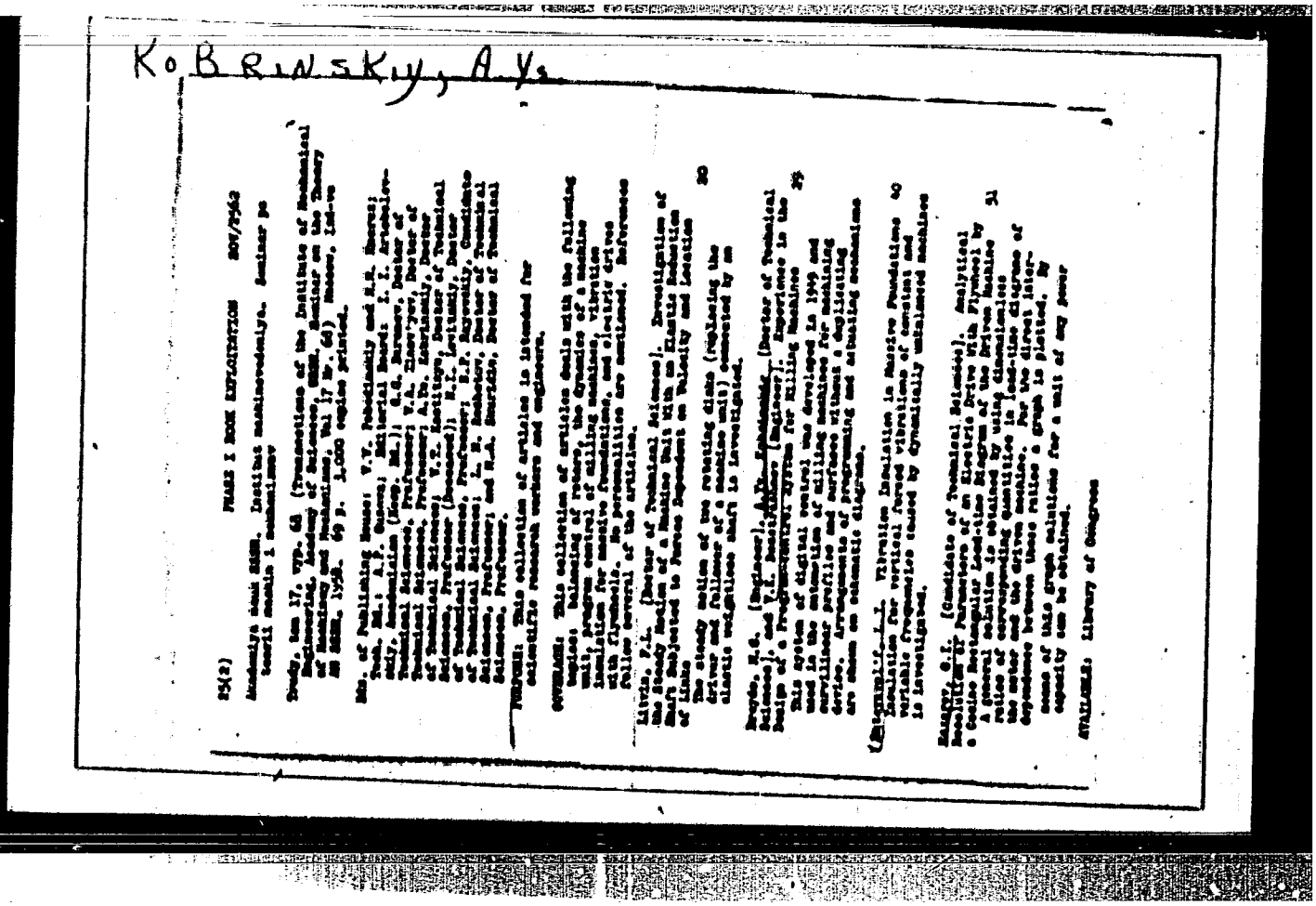
LEVINSON, Lev Yefimovich, prof. [deceased]; KOBRINSKIY, A.Ye., doktor tekhn.nauk, nauchnyy red.; GAVRILOV, V.P., red.; KUPTSEVAYA, E.M., red.; OSTRIKOV, N.S., tekhn.red.

[Theoretical mechanics with elements of the theory of mechanisms] Teoreticheskaia mekhanika s elementami teorii mekhanizmov. Izd. 3-e, ispr. Pod red. A.E.Kobrinskogo. Moskva, Vses. uchebno-pedagog. izd-vo Trudrezervizdat, 1958. 410 p. (MIRA 11:5)
(Mechanics)

KOBRINSKIY, A. E.

M. L. Bychovskiy and A. E. Kobrinskiy, "On the Dynamics of Sensing Systems in Program Controlled Machinery."

paper presented at the 2nd All-Union Conf. on Fundamental Problems in the Theory of Machines and Mechanisms, Moscow, USSR, 24-28 March 1958.



KOBRINSKIY, A.Ye.

PHASE I BOOK EXPLOITATION SOV/5562

Akademiya nauk SSSR. Institut mashinovedeniya. Doklady po teorii mekhanizmov i mashin

Doklady, no. 17: VTD-68 (Transactions of the Institute of Mechanical Engineering, Academy of Sciences USSR, Section on the Theory of Machines and Mechanisms, No. 17) M., Izd-vo AN SSSR, 1958. 69 p. 3,000 copies printed.

Ed. of Publishing House: V.V. Rodionnyy and N.N. Shorygin; Tech. Ed.: L.V. Gusev; Editorial Board: I.I. Artobolevskiy, Academician (Resp. Ed.), G.G. Baranov, Doctor of Technical Sciences, Professor; V.A. Zinov'yev, Doctor of Technical Sciences, Professor; A.Ye. Kobrinskiy, Doctor of Technical Sciences, Professor; V.S. Kortelev, Doctor of Technical Sciences, Professor (deceased); K.P. Lavrinenko, Doctor of Technical Sciences, Professor; K.P. Ogurtsov, Candidate of Technical Sciences; L.N. Reshetov, Doctor of Technical Sciences, Professor; and K.A. Shorygin, Doctor of Technical Sciences, Professor.

PURPOSE: This collection of articles is intended for scientific research workers and engineers.

COVERAGE: This collection of articles deals with the following topics: balancing of rotors, the dynamics of a machine unit, program control of milling machines, vibration insulation for machine foundations, and electric drive with flywheels. No personalities are mentioned. References follow several of the articles.

Livits, F.I. (Doctor of Technical Sciences). Investigation of the Steady Motion of a Machine Unit With an Electric Regulator of Limited Power Dependent on Velocity and Location 8

The steady motion of two rotating disks (replacing the electric regulator which is investigated.

Dyuba, K.G. (Engineer); and A.Ye. Kobrinskiy (Engineer). Design of a Programming Drive for Milling Machines

This system of digital control was developed in 1955 and used in the execution of milling machine for machining curvilinear profile and surfaces without a duplicating device. Arrangements of programming and checking are shown on schematic diagrams.

Kobrinskiy, A.Ye. Vibration Insulation in Machine Foundations 9
Evaluation for vertical forced vibrations of constant and variable frequencies caused by dynamically unbalanced machines is investigated.

Rabinovich, G.I. (Candidate of Technical Sciences). Analytical Method of Synthesis of an Electric Drive With Flywheel 31
A general analytical solution is obtained by using dimensionless ratios of corresponding quantities in indicative diagrams of dependence between these ratios and the drive module. For the direct integration of this graph solution for a unit of any power capacity can be obtained.

AVAILABLE: Library of Congress

BYKHOVSKIY, M.L., doktor tekhn.nauk, starshiy nauchnyy sotrudnik;
KOBRINSKIY, A.Ye., doktor tekhn.nauk, starshiy nauchnyy sotrudnik.

Investigating the dynamics of stepped systems for program control of machine tools. Izv.vys.ucheb.zav.;mashinostr. no.2:79-90 '58. (MIRA 11:12)

1. Institut mashinovedeniya AN SSSR i Moskovskoye vysshoye tekhnicheskoye uchilishche im. Baumana.
(Machine tools--Numerical control)

AUTHOR: Kobrinskiy, A. Ye., Doctor of Technical Sciences 30-2-44/49

TITLE: Programmed Control of Metal Cutting Machines (Programmnoye upravleniye metallorezhushchimi stankami), All-Union Conference (Vsesoyuznoye soveshchaniye)

PERIODICAL: Vestnik Akademii Nauk SSSR, 1958, Nr 2, pp 113-115(USSR)

ABSTRACT: This conference took place in Moscow from November 13-16, 1957. It was called by the Institute for Engineering of the AN USSR, the Experimental Scientific Research Institute for Metal Processing Machines, as well as by the Institute for Machines and Tools in Moscow. The conference aimed at the following exchange of experience and decision as to the most important work to be carried out in this field in future. The conference was attended by representatives of the Councils of Political Economy, of industry, engineering departments, scientific research institutes as well as of universities. A. A. Blagonravov, director of the Institute for Engineering opened the conference. The following reports were given:

1) V.I. Dikushin reported on the present stage of the system of preset course in the USSR and its development.

Card 1/3 2) A. P. Vladziyevskiy reported on the tasks in the field of

machine building in connection with preset course.
3)V. A. Trapeznikov reported on current work carried out by the Institute for Automation and Remote Control of the AN USSR.
4)M. G. Breydo and A. Ye. Kobrinskiy (Institute for Machinery) reported on work carried out with a modernized model of a milling machine. They also mentioned that M. L. Bykhovskiy and A. Ye. Kobrinskiy had put equations describing the step by step principle of preset course.
5) V. G. Zusman reported on the work carried out by the Institute for Metal Processing Machines.
6) A. M. Lebedev reported on semiconductor switches.
7) G. I. Kamenetskiy described hydraulic amplifiers and drives.
8) D.M. Kritskiy spoke on peculiarities of constructions.
9) A. V. Zinchenko reported on experimental results with a model of a milling machine.
10) I. P. Konstantinov spoke on the work of the Factory for Milling Machines, Dmitrovsk.
11) L. A. Gleyser reported on the control of a turning lathe by means of a perforated paper band.
12) L. M. Kaufman reported on turning lathes controlled by counters.

Programmed Control of Metal Cutting Machines
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13) A. M. Razygrayev reported on the work of the Machine Factory imeni Ya. M. Sverdlov in Leningrad
14) I. I. Knyazhitskiy reported on the work in the Machine Factory imeni S. M. Kirov in Odessa
15) A. I. Levin reported on the work in the Tool Factory in Moscow
16) G. A.Spynu reported on the use of tape recording.
17) I. M. Eterman reported on a calculation method of the program of a milling machine.
18)M.P.Rashkovich reported on the application of control of drills
19)Ya.M.Khaymovich reported on electro-hydraulic machine drives.
20) V.S.Vikhman reported on an automatic compensation of the wear of cutting tool
21) B. V. Anisimov reported on the work carried out by the Chair for Computing Machines of the Technical College imeni Bauman in Moscow.
22)I.A. Vul'fson reported on the development of automation of program setting abroad.

This conference accepted a number of scientific organizational proposals.

Card 3/3 1. Machine tools-USSR 2. Machine tools-Automation-USSR
3. Mathematical computers-Applications

AUTHOR: A. Ye. Kobrinskiy SOV/24-58-6-35/35

TITLE: The Second All-Union Conference on the Basic Problems in the Theory of Machines and Mechanisms (Vtoroye vsesoyuznoye soveshchaniye po osnovnym problemam teorii mashin i mekhanizmov)

PERIODICAL: Izvestiya akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, 1958, Nr 6, pp 158-160 (USSR)

ABSTRACT: This conference was held on 24-28 March 1958 at the Institute of Machine Science, Ac. Sc. USSR. The conference reviewed the work done since the first conference held in June 1954. Academician I.P. Bardin, vice-president of the Academy of Sciences, opened the conference and discussed the scientific problems encountered in process automation. Three papers were read at the first plenary session. Academician A.A. Blagonravov detailed the exact relations between the theory of mechanisms and automatic machine design, and emphasized some general principles. Academician I.I. Artobolevskiy dealt with the present situation in the theory of machines and mechanisms, and with recent trends.

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SOV/24-58-6-35/35

The Second All-Union Conference on the Basic Problems in the Theory of Machines and Mechanisms

Academician I.G. Bruyevich dealt with the theory of errors as applied to machines and instruments, and with recent progress in actual devices. Five sections dealt with the subsequent work of the Conference. 1) Analysis and synthesis of mechanisms. In all 23 papers were read in this section: they covered all aspects of geometry and kinematics as applied to mechanisms. Many of the papers dealt with exact and approximate synthesis methods (those by I.I. Artobolevskiy, N.I. Levitskiy, V. Lichtenheld of East Germany, I.Sh. Pinsker, I. Volmer of East Germany, S.A. Cherkudinov, A.T. Grazarov, S.I. Gamrekeli, V.F. Solyanik and K.Kh. Shakhbazyan). Another group of papers dealt with analysis methods, including matrix methods and graphical procedures (papers by G.D. Ananov, by F.M. Dimentberg and S.G. Kislitsyn, by G.S. Keslitsyn (Bulgaria), N.I. Kolchin, D. Mangeron (Rumania), L.I. Reshetov, Ya.S. Zil'berman and K.F. Sasskiy). Much attention was devoted to machines with complex linkages and hydraulically operated parts (papers by

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The Second All-Union Conference on the Basic Problems in the Theory of Machines and Mechanisms

Ya.L. Geronimus, N.V. Yeremeyev, K.V. Tir, Ye.A. Tsukhanova, Yu.A. Miropol'skiy and G.A. Shaumyan). It was shown that analytical methods had advanced greatly, and that the theory of exact synthesis had shown much progress, particularly as regards mechanisms which reproduce algebraic and transcendental functions.

2) Machine Dynamics Section. In all, 23 papers were read in this section; they can be divided roughly into three sets. The first dealt with vibrations in machines (papers by A.P. Bessonov and A.V. Shlyakhtin, by I.I. Blekhman, D. Damasevich (Poland), A.Ye. Kobrinskiy, V.O. Kononenko, V.A. Kudinov, L. Pust (Czechoslovakia) and Ya.M. Raskin). The second dealt with dynamic analysis of machines and engines; the discussions showed that the papers touched very closely on practical problems. Metal working machines, mining machines, textile machines and many others were dealt with (papers by S.I. Kozhevnikov, A.I. Kukhtenko, A.P. Malyshev, V.I. Nebesnov, L.V. Petrokas, Ye.G. Nakhapetyan, M.B. Paley,

The Second All-Union Conference on the Basic Problems in the Theory of Machines and Mechanisms

L.I. Tsekhnovich and L.A. Shoykhet). The third set dealt with experimental measurements of kinematic and dynamic parameters (papers by R. Bogdan and Pelikudi (Rumania), by N.P. Rayevskiy, A.N. Burago, D.M. Zmiyev, A.P. Ivanov and T.S. Vorob'yeva). 3) Theory of errors in machine- and instrument-making. 11 papers were read; most of them dealt with methods of calculating errors for parts or sections of machines, particularly computing devices (mechanical and electrical). (Papers by T.A. Golinkevich, A.I. Ivanov, Ye.A. Mikhaylov and V.I. Sergeyev). Manufacturing errors in automatic machines were dealt with in papers by A.G. Gladilin, M.I. Kochenov, G.A. Lifshits and A.P. Voloshchenko. The section was held partly in conjunction with that on the theory of automatic machines, and three papers were read at this meeting (by M.L. Bykhovskiy, B.G. Dostupov and Ya. Oderfel'd (Poland)). These papers dealt with accuracy in electrical circuits and analogues which solve ordinary differential equations. 4) Theory of automatic

The Second All-Union Conference on the Basic Problems in the Theory of Machines and Mechanisms

machines. 10 further papers were read, additional to those noted above. The structures of automatic machines and economic aspects of automation were discussed (papers by S.I. Artobolevskiy, G.A. Shaumyan and G.V. Krupin). Much attention was given to analyses of control systems and kinematic aspects of such machines (papers by M.L. Bykhovskiy and A.Ye. Kobrinskiy, by N.I. Kamyshniy, M.V. Medvid' and V.F. Preyss, by G. Trenkner (E.Germany), E.I. Shekhvits, M.K. Klebanov, I.A. Klusov and D.S. Tavkhelidze). Digital computers have become widely used for control purposes in this context. 5) Theory of machine transmissions. 10 papers and 7 communications were presented, mainly devoted to analysis and design of simple and of complex gear transmissions, development of systems and of system corrections, analysis of the operation of gears in differential and epicyclic transmissions and also to the problem of analysis and calculation of various types of worm gears. A paper by the team: I.A. Bolotovskiy, T.P. Bolotovskay, V.E. Smirnov

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and papers by Yu.N. Budyk, V.A. Gavrilenko, Ya.S. Davydov, I.S. Krivenko, F.L. Litvin and communications by M.D. Zlatopol'skiy, A.S. Shashkin. Much attention was paid to problems on the theory and design calculations of two systems of gear meshing developed by the late M.L. Novikov (Doctor of Technical Sciences). The papers of G.G. Baranov, G.G. Ginzburg, I.I. Krasnoshchekov and the contributions of a number of others dealt with the extensive progress achieved in the further development of the theory of meshing of Novikov, successful experimental investigation of transmissions designed according to this system and successful use of such systems in various branches of engineering. N.I. Colcin and I. Shreuter (Czechoslovakia) and also V.F. Mal'tsev, dealt with problems of the theory of flexible coupling

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transmissions, the hook hinge and free running roller mechanisms. The discussions indicated clearly that much work has been done in developing the Novikov gears and also in introducing these gears into many branches of industry. New methods were presented of manufacturing circular as well as non-circular gears, both with internal and external meshing.

Card 7/7

USCOMM-DC-60,717

BENYDO, M.G., KOBRINSKIY, A.Ye.; KRESTRASHKOV, V.K.

Designing programmed control systems for milling machines. Trudy Inst. mash. Sem. po teor.mash. 17 no.68:29-39 '58. (MIRA 11:7)
(Milling machines--Numerical control)

KOBRINSKIY, A.Ye.; SHLYAKHTIN, A.V.; YAMSHCHIKOVA, M.N.

Vibrations of nonlinear systems caused by periodical impacts.
Trudy Inst.mash.Sem.po teor.mash. 18 no.70:49-67
(MIRA 12:1)

(Vibration)

GRIGOR'EV, Lev Solomonovich; KOBRINSKIY, A.Ye., nauchnyy red.; ISLANKINA, T.F., red.; ATROSHCHENKO, L.Ye., tekhn.red.

[On cybernetics; materials of Sunday lectures delivered in the Technical Museum "News in science and technology"] O kibernetike; po materialam Voskresnykh chtenii Politekhnicheskogo muzeia "Novosti nauki i tekhniki." Moskva, Izd-vo "Znanie," 1959. 30 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii. Ser.4, Nauka i tekhnika, no.28) (MIRA 12:10)
(Cybernetics)

POPOV, B.P., prof.; DIKKERT, G.A., inzh., red.; ABRIN, S.O., dotsent, red.; KOBRINSKIY, A.Ye., doktor tekhn.nauk, red.; MOLODAYA, Ye.K., prof., red.; ROSHCHIN, G.I., dotsent, red.; SLAVUTSKIY, Ya.L., kand.biolog.nauk, red.; SHUMK, N.A., prof., red.

[What one should know about prosthesis] Chto nuzhno znat' o protezirovanii. Moskva, M-vo sots.obespecheniia RSFSR, 1959. 66 p. (MIRA 13:6)

(PROSTHESIS)

RAYNVSKIY, Nikolay Petrovich, kand.tekhn.nauk; ARTOBOLEVSKIY, I.I., akademik, otv.red.; BLAGONRAVOV, A.A., akademik, red.; BRUYEVICH, N.G., akademik, red.; DIKUSHIN, V.I., akademik, red.; SERGEYEV, S.V., akademik, red.; PINEGIN, S.V., prof., doktor tekhn.nauk, red.; LEVITSKIY, N.I., prof., doktor tekhn.nauk, red.; KOBRINSKIY, A.Ye., doktor tekhn.nauk, red.; BESSONOV, A.P., kand.tekhn.nauk, red.; EMLYANIN, P.N., red.izd-va; ASTAF'YEVA, O.A., tekhn. red.

[Indicators of mechanical parameters of machines] Datchiki mekhanicheskikh parametrov mashin. Moskva, Izd-vo Akad.nauk SSSR, 1959. 186 p. (MIRA 13:1)

1. AN USSR (for Sörensen).
(Measuring instruments) (Machinery--Testing)

DIMENTBERG, Fedor Moiseyevich, doktor tekhn.nauk; SERENSEN, S.V., akademik, otv.red.; ARTOBOLEVSKIY, I.I., akademik,otv.red.; BLAGONRAVOV, A.A., akademik; red.; BRUYEVICH, N.G., akademik; red.; DIKUSHIN, V.I., akademik, red.; PINEGIN, S.V., prof., doktor tekhn.nauk, red.; LEVITSKIY, M.I., prof., doktor tekhn.nauk, red.; KOBRINSKIY, A.Ye., doktor tekhn.nauk, red.; RAYEVSKIY, M.P., kand.tekhn.nauk, red.; BESSONOV, A.P., kand.tekhn.nauk, red.; MIKHEYEV, A.S., red.izd-va; KUZ'MIN, N.K., tekhn.red.; MAKUNI, Ye.V., tekhn.red.

[Bending vibrations of revolving shafts] Izgibnye kolebaniia vrashchaiushchikhsia valov. Moskva, Izd-vo Akad.nauk SSSR, 1959. 246 p.

1. Akademiya nauk USSR (for Serensen).
(Vibration) (Shafting)

KOBRINSKIY A.Ye.

CHERKUDINOV, Sergey Aleksandrovich; ARTOBOLEVSKIY, I.I., akademik, otv.red.; BLAGONRAVOV, A.A., akademik, otv.red.; BRUYEVICH, N.G., akademik, red.; DIKUSHIN, V.I., akademik, red.; SERENSEN, S.V., akademik, red.; PINEGIN, S.V., prof., doktor tekhn.nauk, red.; LEVITSKIY, N.I., prof., doktor tekhn.nauk, red.; DI-MENTBERG, F.M., doktor tekhn.nauk, red.; KOBRINSKIY, A.Ye., doktor tekhn.nauk, red.; RAYEVSKIY, N.P., kand.tekhn.nauk, red.; RESSONOV, A.P., kand.tekhn.nauk, red.; KUDASHEV, A.I., red.izd-va; ASTAF'YEVA, O.A., tekhn.red.

[Synthesis of flat hinged-lever mechanisms; problems on the reproduction of a continuous function on a given section] Sintez ploskikh sharnirno-rychazhnykh mekhanizmov; zadachi o vosproizvedenii nepreryvnoi funktsii na zadannom otreske. Moskva, Izd-vo Akad.nauk SSSR, 1959. 321 p. (MIRA 13:1)

1. AN USSR (for Serensen).
(Machinery, Kinematics of)

Kobrinskiy, A. A.

ARTOBOLEVSKIY, Ivan Ivanovich, akademik; LEVITSKIY, N.I., prof., doktor tekhn.nauk, otv.red.; BLAGONRAVOV, A.A., akademik, red.; BRUYEVICH, N.G., akademik, red.; DIKUSHIN, V.I., akademik, red.; SERGEYEV, S.V., akademik, red.; PEREGUD, S.V., prof., doktor tekhn.nauk, red.; DIMENTBERG, F.M., doktor tekhn.nauk, red.; KOBRINSKIY, A.Ye., doktor tekhn.nauk, red.; RAYEVSKIY, N.P., kand.tekhn.nauk, red.; RESSONOV, A.P., kand.tekhn.nauk, red.; PERLYA, Z.N., red.izd-va [deceased]

[Theory of mechanisms for reproduction of flat curves] Teoriia mekhanizmov dlia vosproizvedeniia ploskikh krivykh. Moskva, Izd-vo Akad.nauk SSSR, 1959. 253 p. (MIRA 12:8)

1. AN USSR (for Sorensen).
(Drawing instruments)

LEVINSON, Lev Yefimovich, prof.; KOBRINSKIY, A.Ye., doktor tekhn.nauk, nauchnyy red.; HYCHKO, T.I., red.; RAKOV, S.I., tekhn.red.

[Fundamentals of mechanical engineering] Osnovy tekhnicheskoi mekhaniki. Pod red. A.E.Kobrinskogo. Izd.3, ispr. Moskva, Vses. uchebno-pedagog.izd-vo Trudrezervizdat, 1959. 343 p. (MIRA 13:5)

(Mechanical engineering)

ARTOBOLEVSKIY, Ivan Ivanovich; LEVITSKIY, Nikolay Ivanovich; CHERKUDINOV, Sergey Aleksandrovich; KOBRINSKIY, A.Ye., red.; MURASHOVA, N.Ya., tekhn.red.

[Synthesis of flat mechanisms] Sintez ploskikh mekhanizmov. Moskva, Gos.izd-vo fiziko-matem.lit-ry, 1959. 1084 p. (MIRA 12:10)

(Mechanics, Analytic)

SOV/179-59-1-2/36

AUTHORS: Brunshteyn, R. Ye. and Kobrinskiy, A. Ye. (Moscow)

TITLE: Periodic Motions of a System Containing a Ball in a Cavity (Periodicheskiye dvizheniya sistemy, soderzhashchey sharik v polosti)

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1959, Nr 1, pp 10-21 (USSR)

ABSTRACT: Motion of a model (Fig.1) composed of two masses M and m in contact is considered. The mass m (a ball) is placed in a cavity of the mass M, leaving an unoccupied space 2r wide. Both masses are subjected to a motion under the action of a harmonic force $P_0 \cos \omega t$. The character of motion of the mass m produces an impact interaction with the mass M. The Eq.(1.1) describes a state of this system at rest. In general, the constants φ, c_1, c_2, c_3, c_4 will take the new values after every impact. This can be calculated (Eqs.1.2 and 1.3) when two impacts are produced during a number of periods $2n + 1$ ($n = 0, 1, 2...$) (Fig.2). Both intervals of motion

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Periodic Motions of a System Containing a Ball in a Cavity

can be found from Eqs.(1.4), where $\mu = M/m$, $0 < R \leqslant 1$ - coefficient of impact regeneration. The Eqs.(1.3) can be expressed in non-dimensional forms (Eq.1.5), and the phase of impact φ_n as:

$$\sin \varphi_n = -\frac{1+\mu}{\mu}\frac{1-R}{1+R}\lambda_n, \quad \cos \varphi_n = \sigma - \frac{\pi}{2}(2n+1)\frac{1+\mu}{\mu}\lambda_n ,$$

where λ_n is found from Eqs.(1.6) and (1.7). As an example, the values of $\lambda_n = \lambda_n(\sigma)$ for $n = 0$ (2 impacts per period) are shown in Fig.3. Before the problem of physical construction of the system is considered, Eq.(1.2) should be examined together with the relations (1.8) and (1.9) (Fig.4). To determine the stability in all possible kinds of motion, detailed analysis should be performed, based on the equations of motion (2.1) and (2.2), where the argument α is not zero. The characteristic values of disturbances of motion can be found from the "adjusted" Eqs.(2.1) and (2.2) and Eq.(1.4), so that Eqs.(2.3-2.5) are derived from which the values of ε_{11} are found for the first impact (Eq.2.6). The ν impact

Card 2/5

Periodic Motions of a System Containing a Ball in a Cavity

can be described by the Eqs.(2.7-2.15). Fig.5 shows the result of this analysis in the form of a "chart" which determines an effect of R and σ on stability. The experimental data on stability of motion were obtained from a device shown in Fig.6 (2 stable resistances 2 are placed on the table 1 of a vibro-stand. A steel ball 3 hangs freely from a steel needle 4). Displacements of the table under the action of impacts of the ball were recorded. The oscillograms obtained for $\sigma_1 = 4$ and $\sigma_2 = 5$ are shown in Fig.7, a and b respectively. It can be seen that they are related to the points 1 and 2 on the chart of stability (Fig.5) for R = 0.55. When the space was increased to $\sigma_3 = 6$ (Fig.7 V) the motion ceased to have a periodic character which can be shown as point 3 on the chart. When $\sigma_4 = 2$ (Fig.7g), the motion does not belong to the type considered in the analysis (point 4 in Fig.5). The case when R = 0, i.e. non-elastic impact, can occur when the velocity of mass M is equal to Eqs.(3.1)

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Periodic Motions of a System Containing a Ball in a Cavity

and (3.2). Then, for different values of σ (Eqs.3.3, 3.4) the relationship of masses m and M changes its character. It still possesses a periodical character when $\sigma \geqslant 1/2\pi(2n + 1)$ and the Eqs.(3.6) to (3.8) are satisfied (α^* - interval of motion of both masses). A dynamic stability in this case (R = 0) can be characterised as follows: when

$$n\pi < \sigma < \frac{1}{2}\pi(2n + 1)$$

the motion is stable when disturbances are small, or when:

$$1/2\pi(2n + 1) < \sigma < \sqrt{1 + 1/4\pi(2n + 1)^2} \quad (n = 0, 1, 2...)$$

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Periodic Motions of a System Containing a Ball in a Cavity

the motion is not stable. There are 7 figures and 11 references; 7 of the references are Soviet, 3 German and 1 English.

SUBMITTED: October 9, 1958.

Card 5/5

BREYDO, M.O. (Moskva);GURFINKEL', V.S.(Moskva);KOBRINSKIY, A.Ye. (Moskva);
SYSIN, A.Ya. (Moskva);TSEYTLIN, M.L. (Moskva);YAKOBSON, Ya.S. (Moskva)

Bioelectrical control system. Probl. kib. no.2:203-212 '59 (MIRA 13:3)
(Electrophysiology) (Prosthesis)

The article deals with the utilization of biological myoelectric currents in the operation of terminal devices. It also describes the principles of operation and design of a model of a servo-drive unit for this purpose. There are 12 references. 9 Soviet (1 translation); 2 German and 1 English.

9(2)

AUTHOR: Kobrinskiy, A.Ye., Doctor of Technical Sciences

SOV/25-59-3-7/46

TITLE: Program-Controlled Machines (Stanki s programmnym upravleniyem)

PERIODICAL: Nauka i zhizn', 1959, no. 3, p. 21

In this article, the author continues his generalized explanation of the fundamental principles of program-controlled machines. He explains how the program tape is transferred to a special-type computer which produces a magnetic tape, recording the computer's calculations in the form of electric pulses in channels on the tape. The number of pulses in a channel controls the distance, and the pulse rate the speed at which the respective part of the machine moves. He then describes the step system with program control, developed in the USSR, which was demonstrated in the example of a Soviet milling machine at the Brussels Fair. Considering the future development

Card 1/2

Program-Controlled Machines

SOV/25-59-3-7/46

ENIMS alone intends to develop 12 new types of such machines in 1959. There are 2 photos and 3 sets of sketches.

Card 2/2

SOV/24-59-3-21/33

AUTHOR: Kobrinskiy, A. Ye. (Moscow)

TITLE: Use of Biological Currents for Control Purposes

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1959, Nr 3, pp 151-154 (USSR)

ABSTRACT: The paper starts with a discussion of the similarities and differences of electronic and biological pulse-controlled systems; it then passes to a historical survey of ways in which biological functions have been controlled by external electrical means. Fig 2 illustrates a model hand controlled by muscle currents; Fig 3 shows the original pulses received from the muscle (top) and the signals actually used to operate the artificial fingers. Fig 4 shows the block diagram of the apparatus, namely, pick-up, amplification and pulse-shaping. Fig 5 shows a second model of the system of Fig 2 (without the electronic units). Fig 6 shows a unit used to provide mechanical power for the fingers. Miniature amplifiers and other units based on transistors are mentioned,

Card 1/2

Use of Biological Currents for Control Purposes

but are not described or illustrated. The paper concludes with a general discussion of the lines future work should take. The paper contains 6 figures and 9 references, 4 of which are Soviet and 5 English.

SUBMITTED: February 23, 1959.

Card 2/2

28(1) SOV/25-59-7-6/53

AUTHOR: Kobrinskiy, A.Ye., Doctor of Technical Sciences

TITLE: Bioelectric Control

PERIODICAL: Nauka i zhizn', 1959, Nr 7, pp 13-16 (USSR)

ABSTRACT: The article describes an exhibit, the "Bioelectric Manipulator", put on display at the Pavilion of the Akademiya nauk SSSR (AS USSR) during the Exhibition of Achievements of the Soviet Economy, Moscow. It consists of an artificial wrist clasped by a bracelet and connected to a man's wrist (Figure 1) and able to carry out all movements which a man's wrist performs. The impulses guiding the artificial wrist arise from the bioelectricity generated by the human organism, not from the muscle contractions conducted to the electrodes on the bracelet's inner side. Soviet scientists are at work on several other bioelectric control systems and envision direct use of the brain-generated bioelectricity in control systems.

Card 1/2

KOBRINSKIY, A.Yu. [Kobrynskyi, A.IU.], doktor tekhn.nauk (Moskva)

Program control of machines. Nauka i zhyttia 9 no.12:12-16 D '59. (MIRA 13:4)
(Machine tools--Numerical control)

KOBRINSKIY, A.Ye.; BRUYDO, M.G.; GURFINKEL', V.S.; POLYAN, Ye.P.; SLAVUTSKIY, Ya.L.; SYSIN, A.Ya.; TSETLIN, M.L.; YAKOBSON, Ya.S.

Research on the development of bioelectric control systems. Trudy Inst.mash.Sem.po teor.mash. 20 no.77:39-50 '59. (MIRA 13:4)

(Electrophysiology)

SPERANSKIY, Nikolay Vasil'yevich; ARTOBOLEVSKIY, I.I., akademik, otv. red.; DIKUSHIN, V.I., akademik, red.; SKRINSKII, S.V., akademik, red.; PIMENOV, S.V., prof., doktor tekhn.nauk, red.; LEVITSKIY, A.I., prof., doktor tekhn.nauk, red.; DIMENTBERG, F.M., doktor tekhn.nauk, red.; KORENISKIY, A.Ye., doktor tekhn.nauk, red.; RAYEVSKIY, N.P., kand.tekhn.nauk, red.; BESSONOV, A.P., kand. tekhn.nauk, red.; SOKOLOVA-CHESTNOVA, V.A., red.izd-va; SUSHKOVA, L.A., tekhn.red.

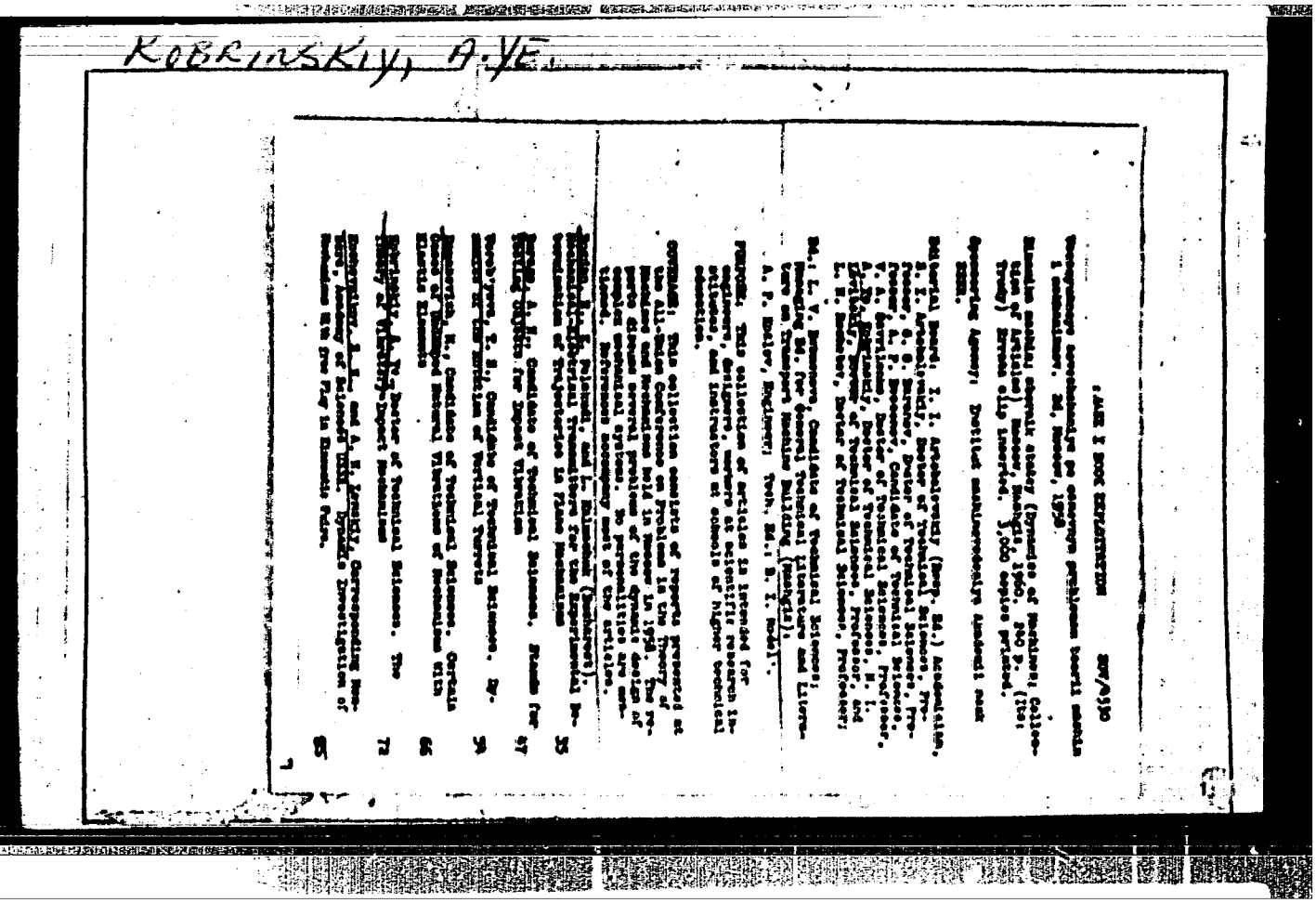
[Designing Geneva wheels] Proektirovanie mal'tiiskikh mekhanizmov. Moskva, Izd-vo Akad.nauk SSSR, 1960. 92 p. (MIRA 13:8)

1. AN USSR (for Sorensen).
(Mechanical movements)

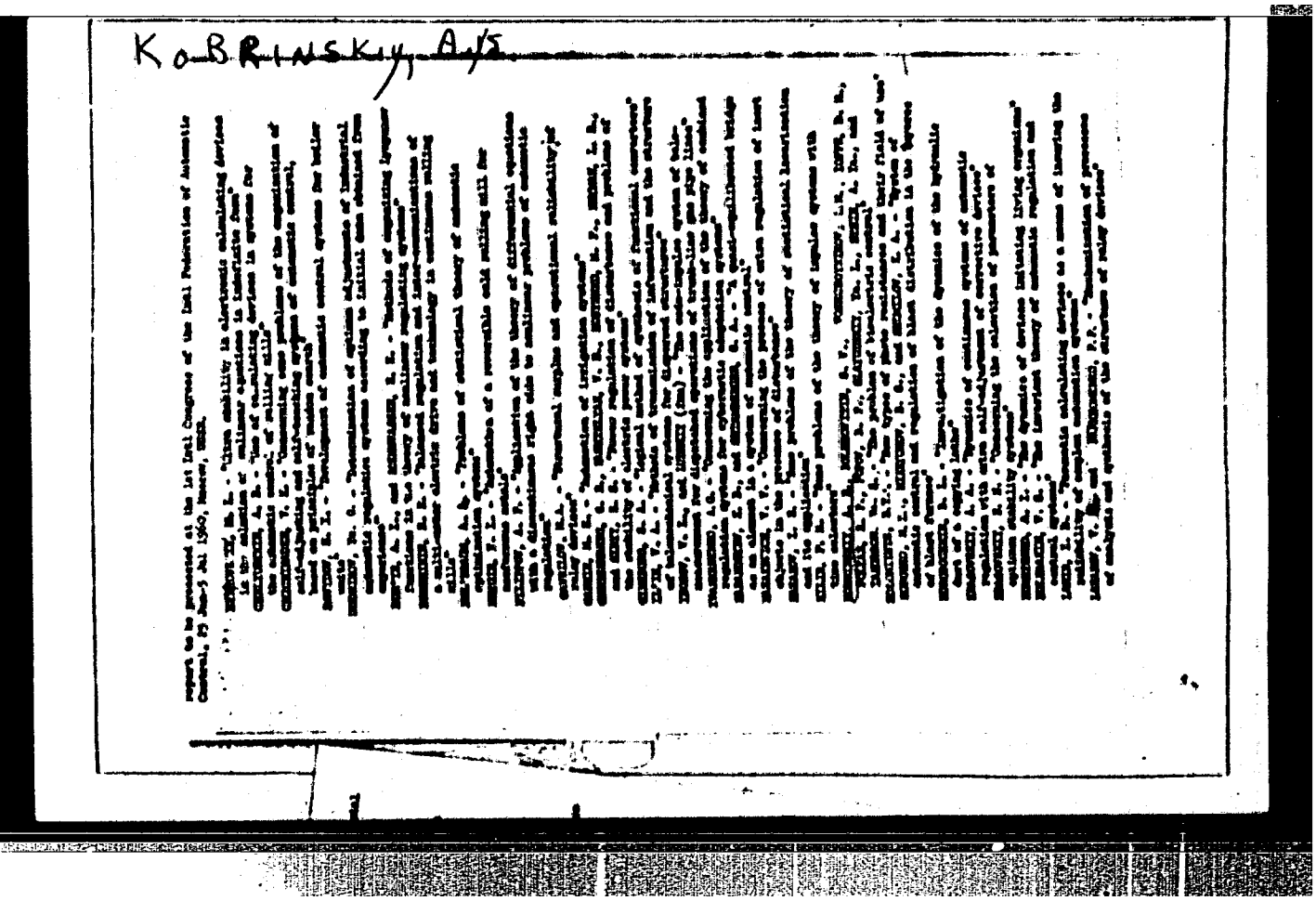
ARTOBOLEVSKIY, I.I., akademik, otv.red.; BYSTRITSKAYA, V.V., inzh., red.; ARTOBOLEVSKIY, S.I., prof., doktor tekhn.nauk, red.; BARANOV, G.G., prof., doktor tekhn.nauk, red.; BESSONOV, A.P., kand.tekhn. nauk, red.; GAVRILENKO, V.A., prof., doktor tekhn.nauk, red.; KOBRINSKIY, A.Ye., doktor tekhn.nauk, red.; LEVITSKIY, N.I., prof., doktor tekhn.nauk, red.; RESHETOV, L.N., prof., doktor tekhn.nauk, red.; MODEL', B.I., tekhn.red.

[Theory of transmissions in machinery] Teoriia peredach v mashinakh; sbornik statei. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit. lit-ry, 1960. 172 p. (MIRA 13:12)

1. Vsesoyuznoye soveshchaniye po osnovnym problemam teorii mashin i mekhanizmov. 2d.
(Machinery) (Power transmission)



KOBRINSKIY, A.YE.



KOBRINSKIY, A.S.

GERTS, Yelena Vasil'yevna; KRUYMIN, German Vladimirovich; ARTOBOLEVSKIY, I.I., akademik, otv.red.; BLAGONRAVOV, A.A., akademik, red.; BRUYEVICH, N.G., akademik, red.; DIKUSHIN, V.I., akademik, red.; SORENSEN, S.V., akademik, red.; PINEGIN, S.V., doktor tekhn.nauk, red.; LEVITSKIY, N.I., prof., doktor tekhn.nauk, red.; DIMENTBERG, F.M., doktor tekhn.nauk, red.; KORRINSKIY, A.Ye., doktor tekhn. nauk, red.; RAYEVSKIY, P.P., kand.tekhn.nauk, red.; BESSONOV, A.P., kand.tekhn.nauk, red.; GORSHKOV, G.B., red.izd-va; MAKOGONOVA, I.A., tekhn.red.

[Theory and design of pneumatic power devices] Teoriia i raschet silovykh pnevmaticheskikh ustroistv. Moskva, Izd-vo Akad.nauk SSSR, 1960. 177 p. (MIRA 14:2)

1. AN USSR (for Sorensen).
(Pneumatic machinery)

S/196/61/000/004/001/002
E073/E135

AUTHORS: Bykhovskiy, M.L., and Kobrinskiy, A.Ye.

TITLE: On the Dynamics of Stepping Systems of Programme Control

PERIODICAL: Referativnyy zhurnal, Elektrotekhnika i energetika, 1961, No.4, abstract no. 4K104, pp.16-17. Sbornik "Teoriya mashin avtomat. deystviya i teoriya tochnosti v mashinostr. i priborostr.", Moscow, Mashgiz, 1960, 19-35

TEXT: The advantages and disadvantages of open and closed control systems with stepping motors are compared. The equations of motion are given for an open stepping system and also the static characteristics of a stepping motor. It was established that for analysing the dynamics of the system two static characteristics of the investigated motor are necessary: the dependence of the torque on the turning angle for the maximum flux and the curve of the increase in the magnetic flux as a function of time. Equipment developed by the In-t mashinovedeniya AN SSSR (Institute of Science of Machines, AS, USSR) is described for recording the static characteristics of a stepping motor. Certain definitions are

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E073/E135

On the Dynamics of Stepping Systems of Programme Control

given which are characteristic for the operation of systems with stepping motors. Analysis of the dynamic properties of an open system is carried out on the phase plane and on an electric analogue. The features of constructing electrical models are considered. A method is presented of plotting integral curves on the phase plane with numerical calculation and graphical constructions.

[Note: The above text is a full translation of the original Soviet abstract.]

Card 2/2

BRUNSHTEYN, R.Ye. (Moskva); KOBRINSKIY, A.Ye. (Moskva)

Stability of periodic movements of vibro-impact systems. Izv.AN SSSR. Otd.tekh.nauk.Mekh.i mashinostr. no.5:131-140 S-O '60. (MIRA 13:9)

(Vibration)

08345

16.9500 (1031, 1121, 1132)

S/024/60/000/006/012/015
E191/E485

AUTHORS: Borisov, D.S. and Kobrinskiy, A.Ye. (Moscow)

TITLE: Contribution to the Dynamics of the Stepping Motor

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1960, No.6, pp.173-178

TEXT: Steady state motion of typical electrical stepping motors is examined analytically and experimentally. Both the stator and the rotor of such a motor are divided into three sections in parallel planes. Each section of the stator consists of alternating electromagnetic poles. Poles of equal polarity are aligned in parallel with the axis. The rotor also consists of three sections, each of which constitutes an externally toothed annular magnetic core with a number of teeth equal to the number of stator poles. The rotor sections are so assembled that each is shifted by one third of the pole distance in relation to the adjoining sections (one step). When the corresponding section of the stator is energized, the rotor turns by one step. When the stator sections are energized in a consecutive sequence, the rotor rotates in one direction. A different energizing order can produce rotation in the opposite direction. Paired energizing

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S/024/60/000/006/012/015
E191/E485

Contribution to the Dynamics of the Stepping Motor

in a certain order can produce the same results. Knowledge of the step motor dynamics includes its "static characteristics" and the "frequency response" of the free oscillations of its rotor. The static characteristics is the output torque at a given stator current as a function of the rotor turning angle. The frequency response is the frequency of the free oscillations of the rotor as a function of the stator current. The torque has a peak roughly halfway through a step interval. Measuring the torque along the falling branch requires a special test rig which was developed by A.Ye.Kobrinskiy et al (Russian patent No.125614 of June 27, 1959). Typical characteristics are shown (Fig.3). A typical frequency response (Fig.5) shows little change of frequency with stator current. A simplified dynamic model of the motor is analytically examined. The delay in the rise of stator current is neglected. The actual static characteristics were replaced by a cubic parabola whose constants are obtained by test. It is assumed that the motor is loaded only by a linear friction torque. A periodic commutation of the stator current is assumed. The motion in the

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Contribution to the Dynamics of the Stepping Motor

interval between two adjacent commutations is the free motion of a non-linear elastic system proceeding with certain initial conditions, characteristic of a given periodic switching. The initial phase and initial velocity of the rotor at the instant of commutation as a function of the frequency, if known, yield the dynamic properties of the motor, namely the amplitude frequency response, the "entrainment" of the rotor and the non-uniformity. The equation of motion is formulated and its periodic solutions are sought. The conditions of periodicity are stated. An analytical derivation yields the amplitude frequency response shown in Fig.6 for different values of the logarithmic decrement. It is shown that, with a commutation frequency approaching the natural frequency of the rotor, maximum amplitudes are obtained and the phenomenon of falling out of step is observed. Falling out of step can be prevented by sufficient friction. The non-uniformity is illustrated in Fig.8. It is greatest at a commutation frequency near the natural frequency of the rotor. At higher commutation frequencies, the non-uniformity falls sharply.

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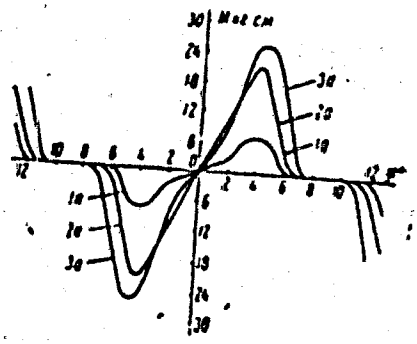
Contribution to the Dynamics of the Stepping Motor

Stepping motors can, therefore, operate at high frequencies of commutation. The entrainment, denoting the position of the rotor in relation to the stator poles, is shown in Fig.9. There are 9 figures and 4 Soviet references.

SUBMITTED: June 14, 1960

Fig.3.



Фиг. 3. Семейство статических характеристик ВШД

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RUBINSKIY, A. YE.

PHASE I BOOK EXPLOITATION SOV/4358

Trud i tekhnika v semiletke (Labor and Engineering in the Seven-Year Plan) Moscow, Profizdat, 1960. 365 p. (Series: Massovaya biblioteka rabochego) 10,000 copies printed.

Compiler: S. S. Krylov; Ed.: A. V. Anisimov; Tech. Ed.: A. A. Solishchanova.

PURPOSE: This book is intended for the general reader.

COVERAGE: The book is a collection of 19 articles dealing with the achievements and progress of the Seven-Year Plan in branches of the Soviet economy and in science. Attention is given to power plant construction, machine building, cybernetics, electrification, transportation, prospecting, steel production, production of consumer goods, mechanization of agriculture, and chemistry. Suggestions for further progress are made. No personalities are mentioned. There are no references.

AVAILABLE: Library of Congress 363

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AC/af/mc

16.9500 (1024, 1031, 1132)

88101
S/107/60/000/011/005/010
E073/E335

AUTHOR: Kobrinskiy, A. Ye., Doctor of Technical Sciences

TITLE: Bioelectric Control Systems

PERIODICAL: Radio, 1960, No. 11, pp. 37 - 39

TEXT: One of the important results of bioelectric investigations was the discovery of the "all-or-nothing-at-all" law. If the excitation applied to the nerves is below the threshold value, no signal will be generated in the nerve fibre. If the excitation is above the threshold value discrete pulses are transmitted, the frequency of which will be the greater the higher the excitation level. The amplitude remains constant at 0.1 V, regardless of the excitation level. The speed of propagation of the pulses along the nervous system does not exceed 100 m/sec and their frequency is 300 - 500 c.p.s. It is pointed out that such systems of discrete electrical signals are extensively applied in programming various automatic-control systems (high-speed computers, digital control of machine tools, etc). However, the nature of command pulses in machines

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Bioelectric Control Systems

differs radically from that of the pulses in the living body and the same applies to the coding and transmission of these pulses to the actuating organs. Application of bio-electric signals for practical control tasks can be subdivided into the following tasks: development of methods of tapping-off the bioelectric signals from the living body; development of methods and equipment for amplifying and decoding these signals; development of actuating mechanisms; development of special equipment to act as feedback between the actuating equipment and the living body. In 1957, the first artificial joint system of the human hand was produced in which muscle currents were used to bend and relax the fingers. A brief description is given of this system. In addition to the author the following participated in the work which led to the development of this bioelectric control system: Doctor of Medical Sciences B.P. Popov; Electrophysiologist Candidate of Medical Sciences V.S. Gurfinkel';

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S/107/60/000/011/005/010
E073/E335

Bioelectric Control Systems

Candidate of Biological Sciences Ya.L. Slavutskiy, Candidates of Technical Sciences Ya.S. Yakobson and D.M. Ioffe; Candidate of Physicomathematical Sciences M.L. Tsetlin; Radioengineers Ye.P. Polyan and A.Ya. Sysin; Design Engineers M.G Breydo and S.V. Bolkhovitin and also the Prosthesis Specialist L.M. Voskoboynikova. The system described enables actuating the finger movements of an artificial hand by the current generated in a human hand carrying out similar movements. However, the main application is for a prosthesis to a forearm.
Fig. 6 shows a circuit diagram of the electronic-control circuit, the input being at the left of the circuit diagram; the output to the drive is at the right of the circuit diagram. The system is powered by a miniature 3-W DC motor with a current supply from a 20-V battery with a 4.5 V tapping.
[Abstractor's note: a more detailed description of the equipment mentioned in this paper is contained in the

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88101
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E073/E335

Bioelectric Control Systems

paper "Problems of Bioelectric Control" by A.Ye. Kobrinskiy, S.V. Bolkhovitin, L.M. Voskoboynikova, D.M. Ioffe, Ye.P. Polyan, B.P. Popov, Ya.L. Slavutskiy, A.Ya. Sysin and Ya.S. Yakobson presented at the First IFAC Congress, Moscow, June, 1960.

In answering questions by R.V. Towns (USA), G. Reswick (USA) and others, Kobrinskiy stated that the electromyogram has a complex frequency spectrum with the highest amplitudes in the range of 150 to 200 c.p.s. and the amplifying apparatus permits the passage of the basic frequency range of the electromyograms. Prostheses are fitted to patients without any special surgical preparation. The natural human reception (sight, sound, proprioception, etc.) is used for feedback. Forearm prostheses can be produced for a stump of any size, except if it is very short. The effector is driven by a reversible DC micromotor. A two-channel

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Bioelectric Control Systems

transistorised amplifier is used. The prosthesis carries out two commands, closing and opening of the fist, but it is possible to extend the number of commands. The patient controls the hand pressure by dosage of the voltage to the stump muscles from which the controlling biocurrents are tapped. There are 8 figures.

KOBRINSKIY, A.Ye.; SHLYAKHTIN, A.V.; YAMSHCHIKOVA, M.N.

Theory of vibration impact machines. Trudy Inst. mash. Sem. po teor. mash. 20 no. 79:27-43 '60. (MIRA 13:12)
(Vibrators) (Impact)

KOBRINSKIY, A.Ye., doktor tekhn.nauk

Dielectric control of prostheses. Vest.AN SSSR 30 no.7: 58-61 Jl '60. (MIRA 13:7)
(Prosthesis)

17000

32059
S/024/61/000/006/001/019
E140/E335

AUTHORS: Kobrinskiy, A.Ye., Korendyasev, A.I. and Levkovskiy, Ye.I. (Moscow)

TITLE: Informational criteria for automata classification

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Energetika i avtomatika, no. 6, 1961, 3 - 12

TEXT: The authors consider that this is the first attempt to classify automatic machines by the manner of introducing and utilizing information - informational criteria. The introduction, transformation and utilization of energy is fully mechanized in an ordinary machine but the processes concerning information are only partially mechanized. These latter processes are also completely mechanized in automation. This important circumstance should also be reflected in the classification of such machines. In addition to information concerning the immediate operation a programme is given, in automatic machines, to the machine as supplementary information. The authors discuss the well-known comparative advantages and disadvantages of the analogue and

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Informational criteria ....

digital methods of supplying a programme. The greater potential precision, the independence of the programme from factors dictated by the structure and design of the machine and the fact that digital programmes can be generated in high-speed computers away from the machine to be controlled are decisive advantages for the digital method. The programme constitutes a set of input commands, which must be supplemented by information fed-back from the work in process, involving dimensional, kinematic, dynamic, temperature, electrical and other parameters both from the machine elements and the work, as well as the ambient medium. The present attempted classification however does not concern these factors but only those criteria directly related to the logical scheme of the machine, the number of streams of information circulating in it and their possible combinations according to the type of automaton. In the block diagram of an automaton one of the basic organs is the means for introducing the programme into the automaton and for reading it. This naturally implies the existence of a programme memory.

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E140/E335

Informational criteria ....

Although the program contains all the information necessary for carrying out a given technological process, it may be in a form in which it cannot be transmitted to the machine mechanisms. A translation unit may be necessary which interprets the instructions in the programme, so that a control unit is also necessary in the machine. The circuits directly affecting the useful operation of the machine constitute the "operator". These three elements, programme, control, operator, constitute the basic circuit of an open-loop automatic-control system. It is not always possible to establish such a clear division of functions in a machine but the more complicated a machine, the sharper become the divisions of this structural scheme. The open-loop block diagram is characterized by a single stream of information, flowing from the programme to the operator. This scheme may be used when the programme is generated and realized by mechanical circuits composed of rigid couplings, when the programme is given in digital form and realized in pulse operations and when there are not high requirements regarding precision. In remotely controlled systems or when high precision is required, this is no longer possible.

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E140/E335

Informational criteria ....

It becomes necessary to utilize a second stream of information obtained from measurements carried out on the machine or the work-piece. This second stream of information constitutes a feedback and represents a wide class of automata. Several structural schemes are possible using feedback. The information is used immediately and continuously in classical feedback systems; the use of digital control permits a more indirect use of this information, for example - to readjust the automatic machine only when the parameters of the finished product approach or pass a certain tolerance limit. Feedback based on measurements of machine or work parameters taken during the course of the work cannot take into account deformations due to mechanical or thermal deformations and the like. Such information can be obtained only on the finished product, when it is too late to utilize it for the current operation. A third information stream is introduced to overcome this difficulty, which is used to adjust the parameter of the control unit itself. In other words, the third stream of information leads to the concept of a self-adjusting automaton. Such machines are capable of generalizing, storing and

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Informational criteria ....

utilizing the experience of their own work. Machines with three streams of information have much more varied possible structures than machines with two streams. The authors expect that, in the future, even more complicated types of automata will be developed. The authors mention various applications of automatic machines to illustrate these points. Among these are a Soviet dynamic balancer, consisting of a balancing machine, and a drilling-machine. A second example concerns a machine for preselection of balls for ball bearings, as a function of the inner and outer diameters of the ball-bearing races. A third example, which is discussed in great detail, is a self-adjusting digital milling-machine control. Another self-adjusting machine mentioned is a hot-rolling mill for thin steel sheets.
The block diagram of the self-adjusting milling-machine control is given herewith:

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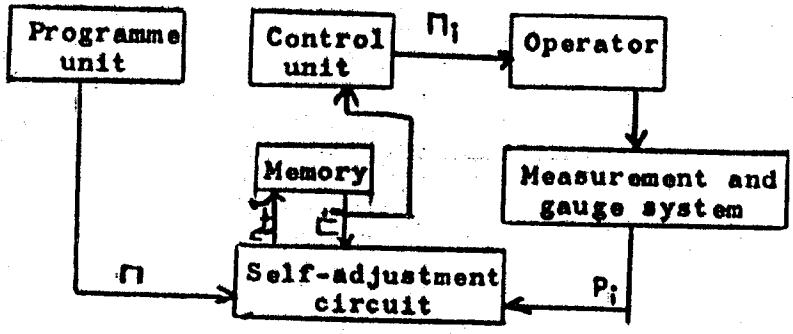
Informational criteria ....

Fig. 4:



The discussion of this automaton centres around the question of the form in which the results of measurements are to be used. Various possibilities are presented, such as the comparison between the absolute values prescribed by the programme and absolute values measured on the machine, measurement of the

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BRUNSHTEYN, R.Ye.; KOBRINSKIY, A.Ye.

Investigating dynamics and stability of vibration-impact systems. Trudy Inst.mash. Sem. po teor.mash. 21 no.83-84:46-54 '61. (MIRA 14:6)

(Vibration) (Impact)

KOBRINSKIY, A.Ye.

Conference on methods for preparing information for program controlled machine tools. Izv. AN SSSR. Otd. tekh. nauk. Energ. i avtom. no.1:192 Ja-F '62. (MIRA 15:3)
(Machine tools--Numerical control) (Machine tools--Congresses)

39807
S/179/62/000/003/007/015
E191/E435

26.4210

AUTHORS: Babitskiy, V.I., Kobrinskiy, A.Ye. (Moscow)

TITLE: An electromagnetic damper

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Mekhanika i mashinostroyeniye, no.3, 1962, 81-84

TEXT: A new method of dynamic vibration attenuation is proposed, based on the utilization of controlled electromagnetic interaction between the system to be damped and the vibration-absorbing element. The ordinary dynamic vibration absorber is distinguished by a critical sensitivity to the frequency of the exciting force. Nonlinear suspension of the dynamic vibration absorber reduces the sharpness of its tuning, but a broad frequency range cannot be achieved in this way quite apart from the difficulties in designing special nonlinear elements. Several configurations of electromagnetic assistance to the damping effect of the vibration absorber are illustrated. In all cases, the dynamic absorber mass is made in the form of a spool shaped core of magnetic material with a central neck. The core

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An electromagnetic damper

is free to move axially in the central hole of a pot electromagnet containing a coil placed in the recess of a ring of magnetic material having a channel section. In scheme A the core is linked to the main vibrating mass by a spring and the electromagnet is rigidly mounted ("earthed"). In scheme B the core is rigidly attached to the mass and the electromagnet is connected to earth by a spring. In scheme C the core is rigidly attached to the mass, and the electromagnet is free floating. In scheme D the core is rigidly attached to the mass and the electromagnet is attached to the same mass by a spring. The motion of these systems is described on the assumption that the current in the coil is constant. The electromagnetic effect is introduced by way of an equivalent elastic constraint depending on the design of the electromagnet and the magnitude of the coil current. Current control is an easy means of obtaining the desired attenuation in a wide frequency range. The amplitudes for the different schemes are formulated and the method of computing the equivalent stiffness is given. Numerical examples illustrate how the amplitude of oscillations can be limited at

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BORISOV, D.S. (Moskva); KOBRINSKIY, A.Ye. (Moskva)

Dynamics of a step-by-step motor with current "cutoff". Izv.AN SSSR.Otd.tekh.nauk.Energ.i avtom. no.2:140-147 Mr-Ap '62. (MIRA 15:4)

(Electric motors) (Automatic control)

S/030/62/000/005/004/006
B104/B108

AUTHORS: Kobrinskiy, A. Ye., Korendyasev, A. I., Levkovskiy, Ye. I.

TITLE: Mechanical power amplifier

PERIODICAL: Akademiya nauk SSSR. Vestnik, no. 5, 1962, 83-85

TEXT: The action of a self-braking power amplifier is illustrated by the example of a self-braking worm gear. A servomotor drives the axle of the worm; a torque acts on the shaft of a wheel. When the rotor of the servomotor is released by a signal given to the servomotor input the shaft will rotate. Such a mechanical power amplifier has an amplification factor $k = \tan\alpha/\tan(\rho-\alpha)$, where α is the pitch angle of the worm, ρ is the angle of friction. This factor is limited by instabilities of the friction factor of the worm gear. The use of such mechanical amplifiers in gear systems is discussed. A clearance-free adjustment of the worm gear maintains a constant phase difference between input and output signal. There are 2 figures.

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KOBRINSKIY, A.Ye., red.; TAMM, B.G., red.; SKVORTSOVA, A., red.; TOOMSALU, E., tekhn. red.

[Methods for treating information for program controlled machine tools] Metody podgotovki informatsii dlia stankov s programmnym upravleniem; sbornik statei. Tallinn, 1963. 183 p. (MIRA 17:2)

1. Eesti NSV Teaduste Akadeemia. Kibernetika instituut.

ARTOBOLEVSKIY, I.I., akademik, red.; LEVITSKIY, N.I., doktor tekhn. nauk, prof., red.; KOZHEVNIKOV, S.N., red.; KORRINSKIY, A.Ye., doktor tekhn. nauk, red.; PETROKAS, L.V., doktor tekhn. nauk, red.; GAVRILENKO, V.A., doktor tekhn. nauk, red.; BESSONOV, A.P., kand. tekhn. nauk, red.; GRODZENSKAYA, L.S. kand. tekhn. nauk, red.; MERENSKAYA, I.Ya., red.izd-va; UVAROVA, A.P., tekhn. red.

[Analysis and synthesis of mechanisms] Analiz i sintez mekhanizmov; sbornik statei. Moskva, Mashgiz, 1963. 234 p. (MIRA 16:9)

1. Soveshchaniye po osnovnym problemam teorii mashin i mekhanizmov. 3d, Moscow, 1961. 2. Chlen-korrespondent AN Ukr.SSR (for Kozhevnikov).

(Mechanisms)

ARTOBOLEVSKIY, I.I., akademik, doktor tekhn. nauk, red.; LEVITSKIY, N.I., doktor tekhn. nauk, prof., red.; KOZHEVNIKOV, S.N., red.; KOURIINSKIY, A.Ye., doktor tekhn. nauk, red.; PETROKAS, L.V., doktor tekhn. nauk, prof., red.; GAVRILENKO, V.A., doktor tekhn. nauk, prof., red.; BESSONOV, A.I., kand. tekhn. nauk, red.; SHEKHVITS, E.I., kand. tekhn. nauk, red.

[Theory of automatic machines and of hydraulic and pneumatic drives] Teoriia mashin-avtomatov i gidro-pnevmoprivoda; sbornik statei. Moskva, Mashgiz, 1963. 327 p. (Its: Trudy)
(MIRA 17:10)

1. Soveshchaniye po osnovnym problemam teorii mashin i mekhanizmov. 3d, Moscow, 1961. 2. Chlen-korrespondent AN UkrSSR (for Kozhevnikov).

AFONIN, A.P. (Moskva); BORISOV, D.S. (Moskva); KOBRINSKIY, A.Ye. (Moskva)

A nonlinear effect in a pulse excited vibrating system. Izv.AN SSSR. Mekh. i mashinostr. no.4:18-22 Jl-Ag '63. (MIRA 17:4)

AFONIN, A.P.; BORISOV, D.S.; KOBRINSKIY, A.Ye.

Subharmonic motion conditions of electric step-by-step motors. Teor. mash. i mekh. no.94/95:34-40 '63.
(MIRA 16:11)

AFONIN, A.P.; BABITSKIY, V.I.; BORISOV, D.S.; KOBRINSKIY, A.Ye.; KOZHIN, V.D.; SAKAYAN, A.R.

Experimental investigation of the dynamics of an electric step-by-step motor. Teor. mash. i mekh. no.94/95:127-141 '63. (MIRA 16:11)

BRUNSHTEYN, R. Ye. (Moskva); KOBRINSKIY, A. Ye. (Moskva)

Dynamics and stability of two-mass vibratory-percussion systems.
Izv. AN SSSR Mekh. i mashinostr. no.5:71-76 S-O '64.
(MIRA 18:1)

ACCESSION NR: AP4028989 S/0280/64/000/002/0175/0181

AUTHOR: Kobrinskiy, A. Ye. (Moscow); Korendyasev, A. I. (Moscow)

TITLE: New mechanical power amplifier

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 2, 1964, 175-181

TOPIC TAGS: amplifier, mechanical amplifier, power amplifier, wormgearing mechanical amplifier, self-locking mechanical amplifier

ABSTRACT: The adaptation of a conventional self-locking wormgearing for amplifying purposes has been made by the authors (Author's Certificates 123829, 136143, 125112, 124772). A power-motor torque is permanently applied to the worm wheel, while the control-motor rotor is coupled with the worm. Due to the self-locking feature, the wormgearing is at rest unless the control motor is energized by a control signal. Two modes of operation are distinguished: (1) trigger, when the control motor developes a torque just enough to unlock the

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ACCESSION NR: AP4028989

gearing;and (2) traction, when the control motor supplies a part of the power to the worm-wheel shaft. Both modes are considered, and amplifier characteristics are plotted. An experimental device consisting of a hydraulic ram coupled to the worm wheel and an electric motor coupled to the worm was used to verify the theoretical characteristics. Orig. art. has: 8 figures and 22 formulas.

ASSOCIATION: none

SUBMITTED: 07Jul63	DATE ACQ: 30Apr64	ENCL: 00
SUB CODE: CG, IE	NO REF SOV: 001	OTHER: 002

Card 2/2

KOBRINSKIY, Aron Yefimovich, doktor tekhn. nauk; [illegible], V., red.

[Who will win?] Kto - kogo? Moskva, Molodaia gvardiia, 1964. 287 p. (MIRA 18:1)

BR

ACCESSION NR: AT4042449 S/0000/64/000/000/0159/0167

AUTHOR: Kobrinskiy, A. Ye., Stepanenko, Yu. A.

TITLE: Auto-oscillatory modes in a hydraulic servo mechanism with play in the feedback

SOURCE: Vsesoyuznoye soveshchaniye po pnevmo-gidravlicheskoy avtomatike. 5th, Leningrad, 1962. Pnevmo- i gidroavtomatika (Pneumatic and hydraulic control); materialy soveshchaniya. Moscow. Izd-vo Nauka, 1964, 159-167

TOPIC TAGS: automation, automatic control system, hydraulic servo mechanism, feedback, auto-oscillation, servo mechanism

ABSTRACT: The authors note that self-oscillating modes may develop in automatic control systems for various reasons, one of these being the presence of free play in the kinematic couples and in the articulations of the mechanical systems and transmissions. A typical example of a system of this type is a hydraulic servo device with play in the feedback circuit. The purpose of the present investigation was to determine the conditions that ensure the suppression of such auto-oscillations. On the other hand, the authors point to proposals involving the efficient utilization of this effect, in which case the problem consists of determining the parmeters which provide the optimum vibro-impact

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ACCESSION NR: AT4042449

mode. Specifically, the authors consider the symmetrical periodic self-oscillating modes of motion, during the course of which there are completed, in a single period, two impacts alternately of the left and right cavities of the kinematic couple which has the free play. They have observed that the effect of a non-linear element of the "play" type is generally estimated by approximate methods, in which case either no consideration is given to the masses of the bodies articulated with play, or a case involving noneiastic impact is considered. In the present paper, the inertial properties of the system are taken into account, with the effect of the impacts characterized by a reduction factor. The periodic mode is studied and equations are obtained for the motion of a slide valve and piston under specific conditions set forth in the article. The stability of the auto-oscillations is analyzed, the method of investigation being based on the method of finite differences. When conducting the study with this method, distrubances are determined at specific moments of time at several characteristic positions of the system; for example, at the moments of impact. By using the equations for the disturbed motion and aligning them during impacts, the relation between disturbances is found after two analogous impacts. These relationships form a system of finite-difference equations. The motion of the system will be stable if, as the number of impacts increases, all disturbances

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ACCESSION NR: AT4042449

tend toward zero or, which is the same thing, if all solutions of the equation system tend toward zero with an unlimited increase in the argument. In this way, the stability investigation resolves to an analysis of a finite-difference equation system. Orig. art. has: 6 figures and 28 formulas.

ASSOCIATION: none

SUBMITTED: 29Jan64 ENCL: 00

SUB CODE: IE NO REF SOV: 006 OTHER: 001

Card 3/3

BABITSKIY, V.I.; KOBRINSKIY, A.Ya.

Periodical movements of a two-component vibrating system in a hollow. Teor. mash. i mekh. no.103/104:56-70 '64.
(MIRA 17:11)

KOBRINSKIY, Aron Yefimovich; BABITSKIY, V.I., red.

[Mechanisms with flexible connections; dynamics and stability] Mekhanizmy s uprugimi sviaziami; dinamika i ustoichivost'. Moskva, "Nauka," 1964. 390 p. (MIRA 17:4)

BRUNSHTEYN, K.Ye.; KOBRINSKY, A.Ye. (Moscow)

"Dynamics and stability of two-body systems moving with intermittent collisions"

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 January - 5 February 1964

AFONIN, A.P.; BORISOV, D.S.; KOBRINSKIY, A.Ye.

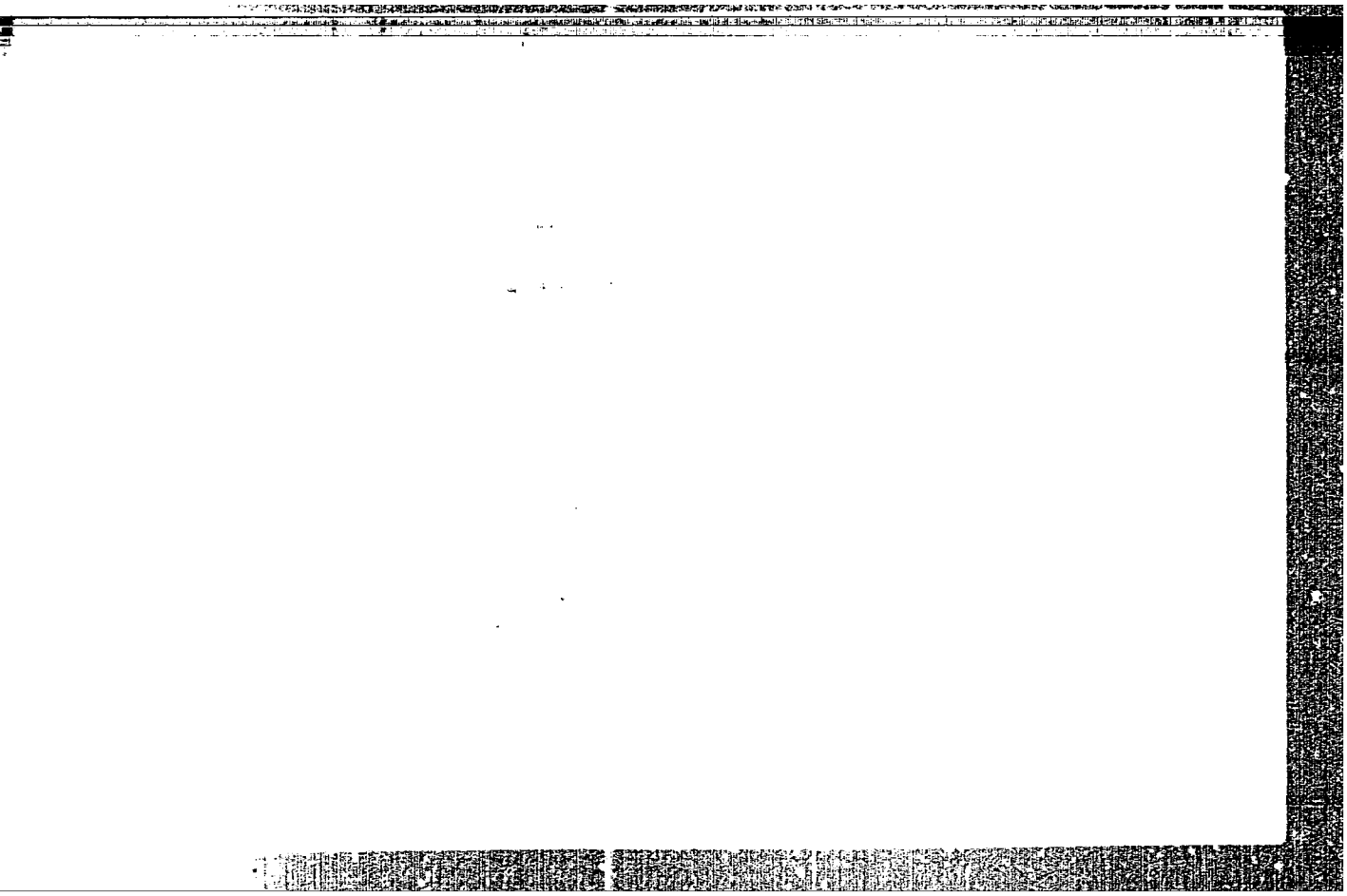
Pickup of an electric step-by-step motor. Teor. mash. i mekh. no.103/104:87-92 '64. (MIRA 17:11)

BORISOV, D.S. (Moskva); GUSEV, V.P. (Moskva); KOBRINSKIY, A.Ye. (Moskva)

Some characteristics of step-by-step motors. Mashinovedenie no.1:44-50 '65. (MIRA 18:5)

KOBRINSKIY, A.Ye. (Moskva); TYVES, L.I. (Moskva)

Dynamics and stability of systems containing two percussion pairs. Mashinovedenie no.4:3-16 '65. (MIRA 18:8)



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KOBRINSKIY, A.Ye.; STEPANENKO, Yu.A.

Dynamics of a nonlinear hydraulic servosystem with a backlash. Teor.mash.i mekh. no.105/106:20-33 '65.

(MIRA 18:4)

BABITSKIY, V.I.; KOBRINSKIY, A.Ye.; ROMANOV, V.D.

Areas of the occurrence and stability of vibratory-percussive conditions for a two-mass vibrating system in a hollow. Teor. mash.i mekh. no.105/106:103-111 '65.

(MIRA 18:4)

BABITSKIY, V.I.; BRUNSHTEYN, R.Ye.; KOBRINSKIY, A.Ye.

Dynamics and stability of elastic systems with backlash. Teor. mash.i mekh. no.105/106:122-134 '65.

(MIRA 18:4)

KOBRINSKIY, A.Ye.; KOLISKOR, A.Sh.; LEVKOVSKIY, Ye.I.

An iteration method in a self-adjusting system of the program control of machine tools. Teor. mash. i mekh. no.107/108:18-24 '65. (MIRA 18:7)

ARTSIS, I.Kh.; KOBRINSKIY, A.Ye.; SPIVAK, Ye.A.

Consideration of forces of friction in the calculation of conveyor drives for processing sheet glass. Stek. i ker. 22 no.2: 47-48 F '65. (MIRA 18:3)